ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

September 7th, 1954.
Vol. 12...No. 2

Dear Sir:

Atlas Corp., the investment trust headed by Floyd B. Odlum, which favors "special situations", has now contracted to purchase a uranium mine and adjacent claims in southeastern Utah for some $9 million, from Mr. V. J. Pick, sole owner. The purchase ranks as one of the three largest investments in the company's portfolio, exceeded only by its holdings in Atlantic Refining Co., and Titeflex, Inc., valued at approximately $10 million each. This is the third purchase of uranium property by Atlas this year. Earlier (through Wasatch Corp., a subsidiary) it had bought control of Lisbon Uranium Corp. for approximately $470,000, and had added to its portfolio 180,000 shares of Standard Uranium Corp. (It also holds 46,665 shares of Pronto Uranium Mines, Ltd., Canada.) (Other BUSINESS NEWS, page 2 this LETTER.)

Diplomatic conversations have recently been initiated by the United States with Britain, Canada, Belgium, and other countries on plans for setting up an international agency, under the United Nations, to promote the peaceful use of atomic energy. The plan, first proposed by President Eisenhower in Dec., 1953, would have the United Nations pool their resources and experience to further the constructive uses of atomic energy. Although discussions so far with the Soviet Union have been fruitless, a place would be left in such an international agency for the Soviet Union if a change of attitude might occur.

Repeated atomic explosions might increase the general level of radioactivity to a degree that the human race may not survive, Edgar D. Adrian, president of the British Association for the Advancement of Science, asserted in his inaugural address before the Association last fortnight. Dr. Adrian, a physiologist and Nobel Prize winner, warned that the explosion of more than a few thousand atomic bombs would make the earth uninhabitable. Such a war, he said, which would end in total destruction, could appeal only to people who are desperate. He observed however, that there are ways of making people desperate, and that it is a danger which must be guarded against.

An intensive investigation into the maximum plausable role that nuclear fuels may be called upon to play in the next 50 years or so has now been made by Palmer C. Putnam, under the auspices of the USAEC. Now available (as "Energy in the Future", 556 pages, D. Van Nostrand, N.Y. 3, price $12.75), the study states and illustrates the problems that may be encountered over the next 50 years in fossile and nuclear fuels. (Other BOOKS, page 2 this LETTER.)

A European Atomic Energy Society has now been established as a European forum for promoting the development of industrial uses of atomic energy. First president of the Society is Sir John Cockcroft, director, Atomic Energy Research Establishment, Harwell, England. Nations represented in the Society are Norway, Sweden, Switzerland, United Kingdom, Belgium, France, and Italy; only those nations with active nuclear energy projects may participate.

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.

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BUSINESS NEWS...in the atomic energy field...

MARKETING UNIT FOR NUCLEAR EQUIPMENT ESTABLISHED:-An Atomic Power Equipment Component has now been formed by the General Electric Co., Schenectady, N.Y., to market atomic power equipment for commercial use. The new component will engineer, manufacture, and sell various types of low power reactors and reactor systems, heat transfer and cooling system components, safety and remote handling devices for radioactive material, and other related atomic reactor equipment. (This new group was originally organized to supply products and services to GE's Atomic Products Division, and will continue to do so. In April, 1953, GE had centralized its atomic energy activities by establishing an Atomic Products Division to administer its contract with the USAEC at Hanford Atomic Products Operation, Knolls Atomic Power Laboratory, and the Aircraft Nuclear Propulsion Department.)

INDUSTRY TO BE BRIEFED ON NEW ATOMIC ENERGY LEGISLATION:-The new Atomic Energy Act (1954), which was signed into law last week by President Eisenhower, will be explained to American industry by some 20 experts on atomic energy from government, industry, labor and the legal profession at a meeting Sept. 27-28 of the Atomic Industrial Forum, Inc., Plaza Hotel, New York City. The meeting will hear the first day a panel discussion, "The New Law Interpreted" by Bennett Boskey, former USAEC deputy general counsel, Everett L. Hollis, former USAEC general counsel, William A. Krebs, Jr., former USAEC assistant general counsel, and others; an address on "Investment Problems and Opportunities" by a speaker from an investment firm; another panel discussion on "What Industry Sees Ahead" by representatives of Babcock & Wilcox, American Machine & Foundry; Nuclear Development Associates; and others; and an address by T. Keith Glennan, former USAEC Commissioner, on "The New Industry-Government Partnership". The second day's program will include a panel discussion on "Government Implementation of the New Law" by USAEC officials; an address, "The Labor Outlook", by A. J. Biemiller, AFL, and a panel discussion, "Insurance Problems of the Atomic Industry" by S. Bruce Black, president, Liberty Mutual Insurance Co., Stuart MacMackin, counsel, atomic products div., General Electric Co., and others.

FINANCIAL NOTES:-An analysis for the investor has been prepared on gold-uranium prospects in South Africa, by Hirsch & Co., 25 Broad St., New York City.....A five page review of the prospects of Climax Molybdenum, active in uranium work, has been made by Eastman, Dillon & Co., 15 Broad St., New York City .....The entire issue of 31,657 shares recently offered by Atomic Instrument Co., Boston, has now been subscribed to; stockholders had been offered the new issue on the proportion of one new share for each four old shares held. Some 85% of the old stockholders took the new issue, with the balance taken up by five banking houses on a firm commitment.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

Nuclear Reactors for Industry & Universities. E. H. Wakefield, Editor. 102 pages. -- Instruments Publishing Co., Pittsburgh 12, Pa. ($2.00)

Biological Effects of External Radiation. National Nuclear Energy Series, Div. VI. Vol. 2. H. A. Blair, Editor. 508 pages. -- McGraw-Hill Book Co., New York 36. ($7.00)

Supplement No. 2 (To atomic energy information kit of electric companies information program.) -- Bozell & Jacobs, Inc., New York 36, N.Y.

Fire and the Atomic Bomb, by D. I. Lawson. A British Government study (65¢) .....Factors Affecting Constitution of Zirconium Alloys, by P. C. L. Pfeil. Work by Atomic Energy Research Establishment, England. ($1.40).-- British Information Services, New York 20, N.Y.

Research Study on Use of Transistors in Radiac Survey Meters. Work done under government contract by Technical Operations, Inc., Arlington, Mass. (No. PB-114326; microfilm, $2.25; photocopy, $4.00; and PB-114327; microfilm, $2.50; photocopy, $5.25.).....Thermoluminescence Dosimeter. Work done at University of Wisconsin, Dep't. of Chemistry. (No. PB-114225; microfilm, $2.00; photocopy $2.75.) .....Biological and Medical Aspects of Ionizing Radiation. Work done at Air Force School of Aviation Medicine, Randolph Field, Tex. (No. PB-114041; microfilm $1.50; photocopy $1.50).....Fundamental Studies on Scintillation Phosphors. Investigations at Armour Research Foundation, Chicago. (No. PB-11566; microfilm $2.00; photostat $2.75.)-- Available from Library of Congress, Publication Board Project, Wash. 25, D.C.

INDUSTRIAL ATOMIC POWER AND ITS RELATIONS TO DEVELOPMENT OF OTHER NATURAL RESOURCES: A special condensation of remarks by L. R. Hafstad, Director, Div. of Reactor Development, USAEC, before Missouri Basin Inter-Agency Committee, on July 21, 1954, Rapid City, S.D.

In uranium we have what promises to be both a compact and a cheap source of energy.

The energy is there; no one questions that. The problem is to get the energy out and into a usable form at a cost which makes the energy, in this final usable form, no higher than that from other competitive sources.

In the field of atomic energy the physicists have done their job well, and the nuclear reactions involved (in getting this energy out) are now adequately understood. Now the problem is for engineers to provide mechanisms necessary for the utilization of this energy and for management to make the economic decisions.

Since the demand is established (for this energy) the remaining problem is one of relative costs between different sources of energy. (In industrialized nations, the per capita demand for energy is mounting; in the U.S. the demand for electric power has been doubling about every ten years, and this trend will continue.) The cost of power from atomic energy plants as now conceived is undeniably high. Historically, however, the trend in a new industry is for a rapid reduction in cost as the technology develops and the volume increases. On the other hand, in an old and established industry, costs tend to stabilize and eventually even to rise again, as the technology is perfected and rising labor costs begin to dominate. Those of us in the atomic energy business feel that the cross-over point on these two curves is likely to come somewhere between 5 and 15 years from now, depending on the vigor and intensity of the development effort in the atomic energy field.

Let us look at what there is now in power producing reactors in the U.S. The land-based prototype of the submarine power reactor, for example, has already operated long enough to have driven a submerged nuclear-powered submarine entirely around the circumference of the earth. A power plant with such performance is no longer a scientific toy. The Argonne and Oak Ridge National Laboratories have each produced experimental reactor power plants which have actually generated in the neighborhood of 200-kw. of electric power. And Duquesne Light Company, with Westinghouse building the reactor proper, is building a nuclear power plant that will generate 60,000-kw. of electrical energy. This is enough power for a good-sized city.

Thus, there is no longer any question that electric power can be produced from nuclear power plants. And with the practicability revolving around the question of cost, it is significant that in recent months accumulated reactor experience has led even our most conservative and sophisticated contractors to support predictions of power costs close to the competitive level. For example, a recent report of General Electric Co. considers two different types of nuclear power plants, one estimated to cost $195.00 per kw. of installed capacity, and the other $215.00. These investment figures compare with $130.00 per kw. for a conventional coal plant. For the nuclear plants, however, the fuel costs are only 1.35 and 1 mill per kilowatt-hour, respectively, as against 3.4 mills for the coal plant with coal at 35 cents per million BTU's. The low fuel costs compensate for high plant costs so that, for the nuclear plants, the overall energy cost becomes 6.7 and 6.8 mills per kilowatt-hour as against 6.9 mills for the conventional plant. Before fractions of a mill are dismissed as unimportant, it would be well to realize that a one-mill-per-kilowatt-hour saving in electricity in the United States would represent a total annual saving to the Nation of about $430 million. Conversely, if nuclear power costs stabilize at a figure one mill above the average of electricity from conventional power sources, the high cost of development of nuclear power may have to be written off as premature.

As to where do we go from there: The thinking by the staff of the USAEC on the transition (to nuclear power plants) is that utilities should seriously consider substituting a few nuclear power plants for conventional plants in the course of normal expansion. Some of the costs of such plants, if they showed technological advance, would be shared by the USAEC.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM THE MANUFACTURERS:- Model DP1 alpha scintillation counter is a complete detector ready for connecting directly to any commercial scaler. This new instrument consists of a type 6292 photomultiplier, a preamplifier, a zinc sulfide phosphor, and a light-proof housing containing a lucite sample and absorber holder. Several shelf-spacings are provided for positioning the sample with respect to the phosphor. The assembly is finished in hard chromium and baked white enamel, permitting it to be thoroughly decontaminated.....Models DD7 and DD8 preflush flow counters are internal sample counters with three chambers; one for counting, another for preflushing, and the third for changing samples. Model DD7 takes sample pans up to 1-inch in diameter; Model DD8 accepts sample pans up to 2-inches in diameter. They may be used either in the Geiger or proportional region. The instruments are recommended by the manufacturer for counting alpha and weak beta particles. Finish is hard chromium for ease of decontamination.--Detectolab, Inc., Chicago 26, Ill.

Model 2715 battery operated survey meter for neutron measurement has been developed for personnel protection in the vicinity of particle accelerators and nuclear reactors. The instrument, which measures thermal and fast neutrons separately, utilizes two enriched boron trifluoride neutron detectors. One is used by itself for the detection of thermal neutrons. The other detector is surrounded by a block of paraffin and a cadmium shield. Indication of proper operation, as well as visual indication of low counting rates, is provided by a pair of neon lamps which are alternately lit with each detected neutron. Earphones are provided for aural monitoring.--Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

NOTES ON PRODUCTS:- A pocket Geiger counter weighing less than four ounces and powered by one pen light cell is now being marked by El-Tronics, Inc., Phila., Pa. Trade-named "Ura-Finder", the unit is slightly larger than a package of cigarettes, and is supplied with a single hearing-aid type headphone. Housed in a rectangular case, the instrument has no external controls, or visual indicating means.

Over a million of its pocket dosimeters for indicating ionizing radiation have been supplied under U. S. Navy and Air Force contracts, according to Corning Glass Works, Corning, N.Y. The round locket-like dosimeter, which is approximately 1⅛-inches in diameter, contains as the sensing element a silver-activated phosphate glass. After this glass has been exposed to ionizing radiation, it fluoresces orange when illuminated by ultra-violet light. The degree of fluorescence is an indication of the amount of ionizing radiation received by the glass.

Manufacturers and distributors of nuclear instruments, who are displaying at the International Instrument Congress & Exposition (Phila., Sept. 13-24, 1954) include: Nuclear Research Corp., Phila., who are showing gamma gage equipment for non destructive testing and automatic liquid level and volume controllers; Ohmart Corp., Cincinnati, who are showing density gages for liquids, slurries and granular materials using Ohmart cells; Professional Instrument Corp., New Haven, exhibiting the firm's new automatic sample computer for measuring radioactive sample, as well as other devices for measuring radioactivity; Tracerlab, Inc., Boston, showing robot scaling equipment, high-speed automatic scalers, and other apparatus; Isotope Developments, Ltd., Reading, England, exhibiting the firm's ionization anemometer and package monitor; and 20th Century Electronics, Ltd., Surrey, England, showing Geiger counter tubes and precision cathode ray tubes.

NUCLEAR REACTOR NEWS:- A new high flux nuclear reactor, to be built at Oak Ridge National Laboratory at an estimated cost of $2.8 million, will provide ORNL and the USAEC with irradiation-test facilities for research and development on reactor fuels, materials, and components under actual conditions of modern reactors. The reactor will have a heterogeneous core with enriched uranium as fuel. It will use ordinary water as a moderator and coolant, and will operate at a power level of five megawatts of heat. The reactor will provide an average thermal neutron flux about twice that of ORNL's low intensity test reactors, and about one-sixth that of the materials testing reactor at the National Reactor Testing Station, Arco, Idaho. Architect-engineering work will be by subcontract under Union Carbide & Carbon, which operates ORNL under a prime USAEC contract.

ATOMIC PATENT DIGEST...latest grants to private & government organizations

GRANTS TO PRIVATE ORGANIZATIONS:- Radiation detection unit comprising (in part) an envelope sufficiently small to fit into the mouth of a human being, this envelope having overlying wall members transparent to radiation to be detected and opaque to radiation in the visible spectrum. Each wall member provides a liquid-confining layer which is substantially impervious to liquid in the mouth of a human being, and to liquid adapted to be released within the envelope Within the envelope are a radiation-sensitive layer responsive to nuclear radiation to be detected, and capable of having a latent image formed upon it on exposure to nuclear radiation, and a rupturable liquid-carrying container holding a liquid for processing the sensitive layer. The liquid, which developes the latent image in the radiation-sensitive layer in accordance with the extend of its exposure to nuclear radiation, is released by pressing the wall members of the envelope toward each other. U.S. Pat. No. 2,687,478 issued August 24th, 1954; assigned to Polaroid Corp., Cambridge, Mass. (Inventor: E. H. Land.)

Electrolytic production of uranium tetrafluoride. Process for the production of uranium tetrafluoride which comprises (in part) submitting to electrolysis an aqueous solution in which the solute comprises substantially uranyl fluoride, this solution being acidified with at least 2-gram mols. of hydrofluoric acid per gram mol. of uranyl fluoride. U.S. Pat. No. 2,687,995 issued August 31st, 1954; assigned to Imperial Chemical Industries, Ltd., Great Britain. (Inventor: E. Lofthouse.)

X-Ray camera for underground geological exploration comprising (in part) a light source which is energized in response to and proportional in intensity to ionizing radiations received by the instrument, with associated optical system, etc., to function to record indications of radiations. U.S. Pat. No. 2,688,095 issued August 31st, 1954 to J. H Andrews, La Mesa, Calif.

Nitric oxide counter. A Geiger-Muller tube comprising (in part) a sealed casing, a cathode member, and an anode member within this casing, with means for connecting the cathode and the anode to a source of potential. A gaseous filling within the casing consists essentially of a rare gas selected from the group consisting of argon, xenon, neon, helium, and krypton, and from about 0.5% to about 5.0% of nitric oxide. U.S. Pat. No. 2,688,097 issued August 31st, 1954 to H. Friedman, Arlington, Va.

Emanator for radioactive gas. Comprises (in part) a closed container, a closed capsule of porous material having walls pervious to a radioactive gas but impervious to radioactive salts and a carrier material in the capsule carrying a radioactive salt. This capsule is mounted inside the container with a clearance space between the container and the capsule, while an electrical resistance heating element is mounted on the container for heating it. A gas outlet is provided leading from this clearance space. U.S. Pat. No. 2,688,098 issued August 31st, 1954 to A. A. Monasterio, Los Angeles, Calif.

GRANTS TO GOVERNMENT ORGANIZATIONS:- Refining beryllium in the presence of a flux. A method of producing beryllium castings which comprises (in part) melting beryllium in the presence of an inert atmosphere, admixing with the beryllium melt a molten refining flux composition containing beryllium fluoride, barium fluoride, calcium fluoride, and lithium fluoride at a temperature of about 2300 deg. F., and then casting the beryllium metal. U.S. Pat. No. 2,686,946 issued August 24th, 1954; assigned to United States of America (USAEC).

Method of producing an alkali metal double fluoride of a refractory metal of the group consisting of zirconium and hafnium. Comprises (in part) heating an aqueous solution of a compound of the refractory metal to a temperature of at least 90 deg. C. in the presence of a source of fluoride ions and of alkali metal ions consisting essentially of the spent salt bath resulting from the electrolytic decomposition of an alkali metal double fluoride of this refractory metal in a fused alkali metal chloride bath and effecting separation. U.S. Pat. No. 2,687,340 issued August 24th, 1954; assigned to United States of America (USAEC).

Sincerely,

The Staff,
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